

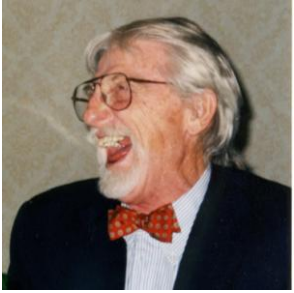
**Empirical Validation of Frequency Aims
for Children with Autism**

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"Stand on my shoulders as I stood on Fred Skinner's shoulders. You see more big things from up here and you see further."

in very loving memory
of
Ogden R. Lindsley

Thank you, Og!




How aims have been set




- Norming
- Super frequency
- Empirical validation

How aims have been set




- Norming
 - Sample data collected from some comparison group of people
- Super frequency
- Empirical validation

How aims have been set




- Norming
- Super frequency
 - Highest attained frequencies used as performance criteria
- Empirical validation


How aims have been set




- Norming
- Super frequency
- Empirical validation
 - Aims directly tested for the outcomes they are correlated with
 - Least often used method

Outcomes 


- REAPS (Houghton, 1980)
 - Retention
 - Endurance
 - Application
 - Performance Standards
- Combined endurance and stability
- Advocated for empirical derivation of aims
- Binder (1996) repeats this call for empirical derivation

Outcomes 


- RESA (Johnson & Layng, 1992)
 - Retention
 - Endurance
 - Stability
 - Application
- Separated endurance and stability
- Described functional independence of frequency and each distinct outcome of fluency
- Offered no measurement procedures
- Offered no description of how they derived their aims

Outcomes 


- Skill
 - Retention
 - Endurance
 - Stability
 - Application
- Measurement procedures designed to extend beyond what was taught (Fabrizio & Moors, 2003)

Retention 

- Retention:
 - Maintenance of performance quality and frequency following periods without practice
- Retention check procedures:
 - Same materials
 - Same level of distraction
 - Last used timing length
 - Following one month without practice


Endurance 

- Endurance:
 - Maintenance of performance quality and frequency across long durations without fatiguing
- Endurance check procedures:
 - Same materials
 - Same level of distraction
 - Triple length of previous longest timing

Stability 

- Stability:
 - Maintenance of performance quality and frequency in the presence of highly distracting stimuli
- Stability check procedures:
 - Same materials
 - Very high level of distraction
 - Last used timing length

Application




- Application:
 - Maintenance of performance quality and frequency in response to previously untaught examples
- Application check procedures:
 - All new examples of materials
 - Same level of distraction
 - Last used timing length

Some Limitations of the data that you're going to see




- No control for children's histories
 - General control in skills targeted
 - Doer, Watcher, Listener, Speaker, Speaker-Own-Listener
 - No control for practice frequencies, # responses emitted, or amount of reinforcement
- Only focuses on one dimension of charted performance
 - Frequency (level)
 - Development of agility

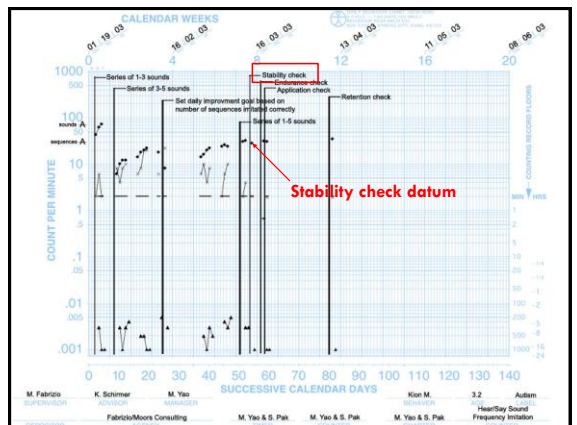
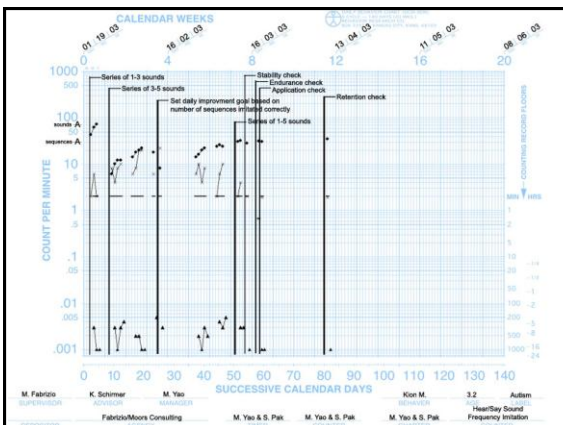


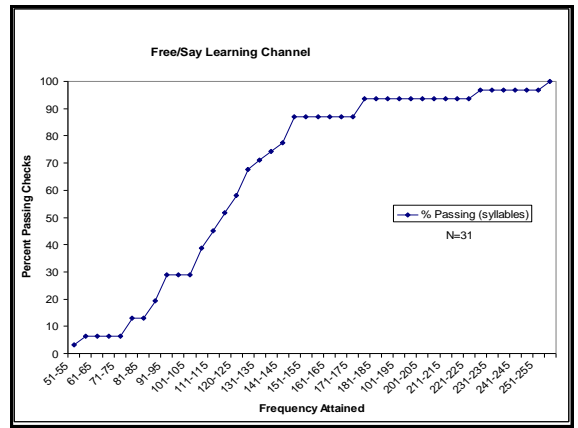
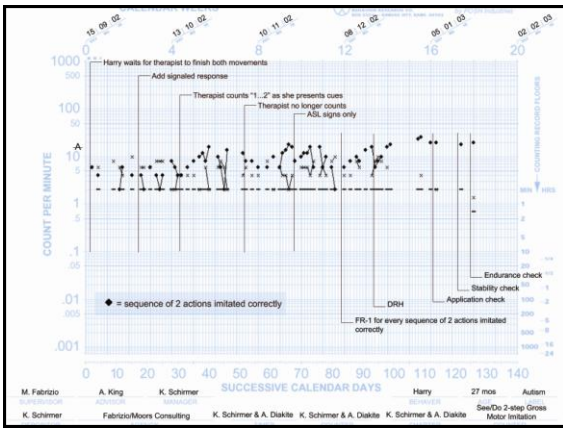
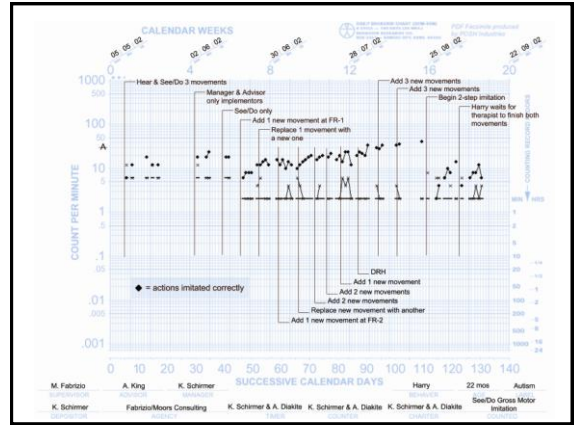
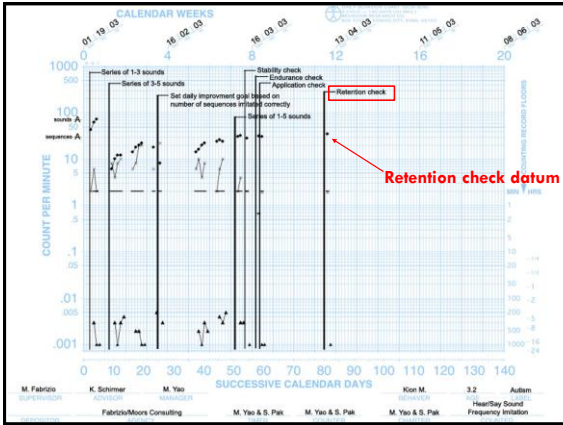
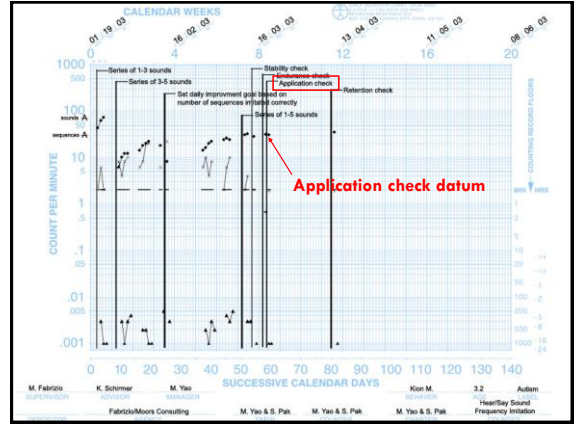
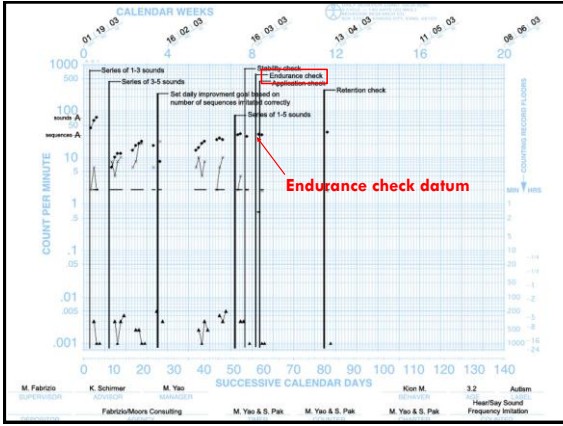
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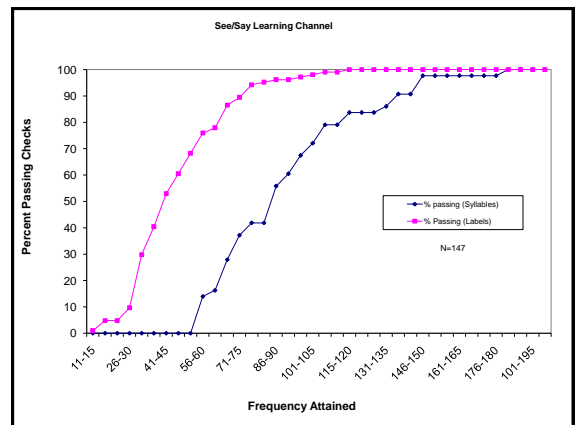
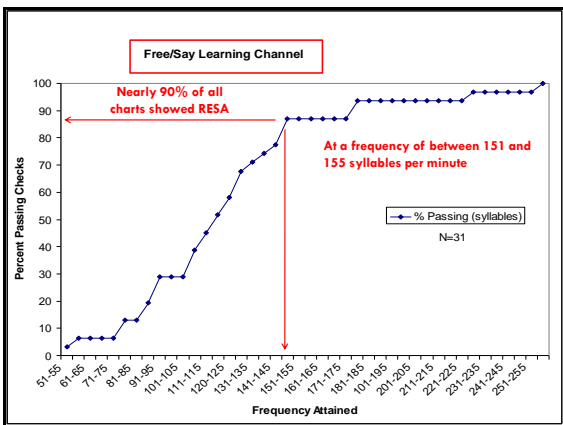
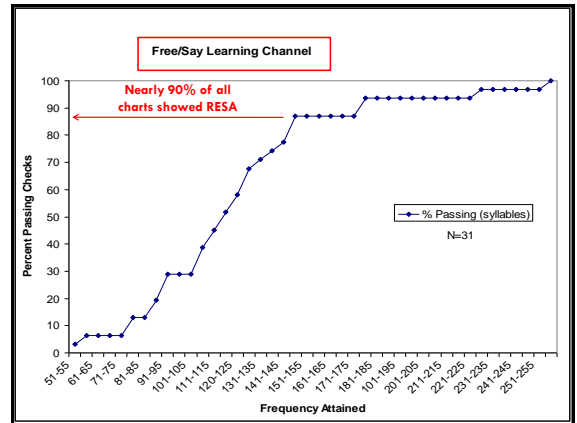
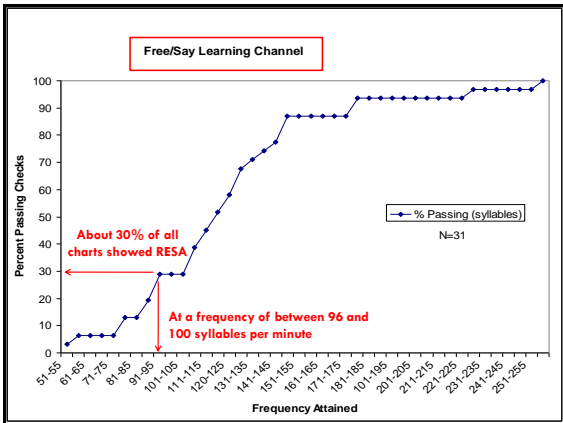
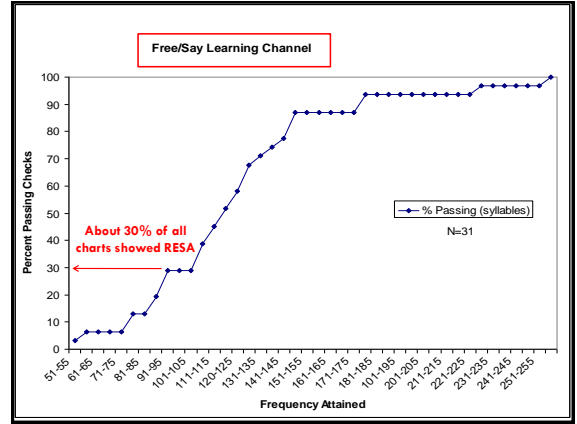
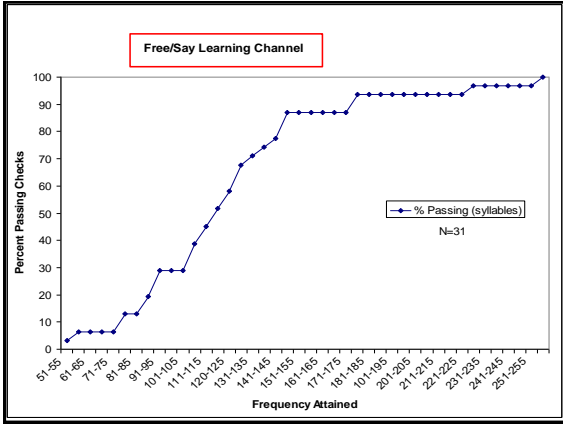
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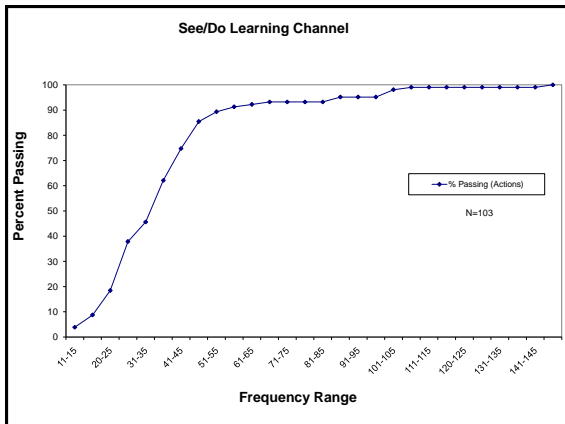
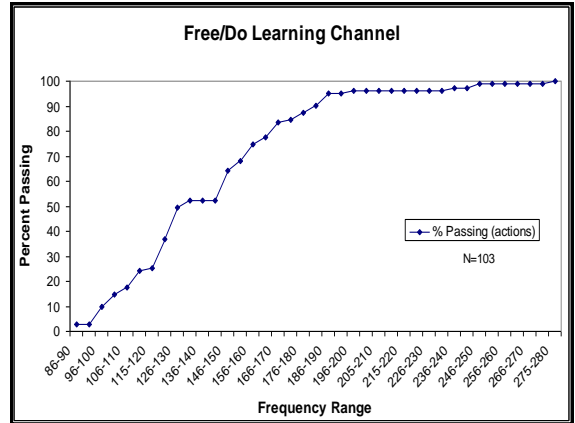
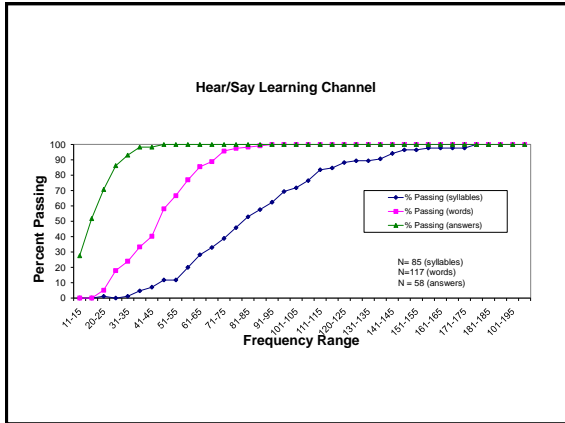
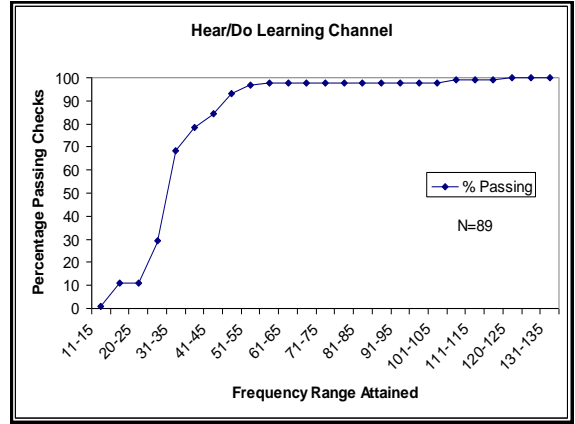
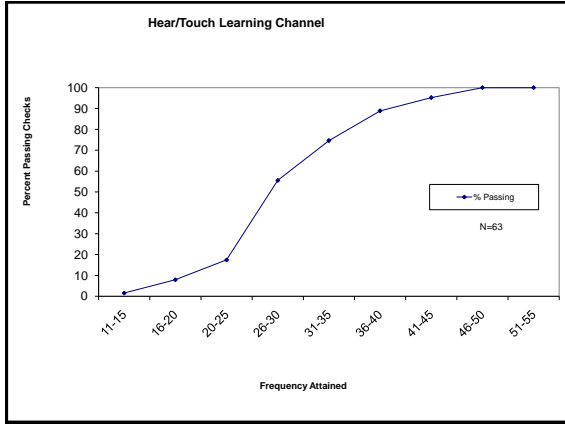


- Approximately 70 children
 - Ages 18-months to 15-years
 - Typical 3:1 sex ratio seen in ASD's
 - Asperger's Syndrome, PDD-NOS, Autism
 - Vancouver BC, Puget Sound, Texas, and Portland area
- More than 700 examples of charted performances










Some conclusions

- A strong, positive correlation appears to exist between frequency of correct responding attained and percentage of charts showing retention, endurance, stability, and application
- Attaining higher frequencies was not always required for the data to demonstrate RESA
- If what you want is the outcomes of fluent performance, then it's probably a good idea to measure those outcomes for each child on each skill


Suggested Frequency Aim Ranges by Learning Channel



| Learning Channel | Suggested Frequency Aim Range | Example Skills |
|------------------|---|--|
| Hear/Do | 35-50 | Hear/Do directions |
| Hear/Say | 40-60 ₁ 70-90 ₂ | Hear/Say Sounds Hear/Say Sentences |
| Hear/Touch | 35-40 | Hear/Touch animals by name Hear/Touch colors |
| See/Do | 35-50 | See/Do gross motor imitation See/Do oral motor imitation |
| See/Say | 55-70 ₁ 80-100 ₂ | See/Say animals by name See/Say size comparisons |
| Free/Do | 150-200 | Free/Do grasp-reach-release Free/Do squeeze |
| Free/Say | 180-200 ₂ | Free/Say steps in a process Free/Say things you did in school |


₁suggested frequency aim ranges when counting words as the movement cycle
₂suggested frequency aim ranges when counting syllables as the movement cycle

Next Steps




- Control for practice frequencies and number of responses emitted
- Add competing stimuli checks for stability
 - Example:
 - Testing stability of See/Say pictures while the child *hears* the names of those same pictures as someone else says them
 - Assumes that the child has previously been taught to Hear/Say words

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 - Assumes that the child has previously been taught to Hear/Say words
 - **Continue collecting data!** 😊

THANK YOU!



References

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